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Indian Standard

HDPE CONTAINERS — FOR LIQUID PESTICIDES — CAPACITY OVER 1 AND UP TO 5 LITRES — SPECIFICATION

भारतीय मानक

एच डी पी ई के धारक — तरल फसल कीटनाशी पदार्थों के लिए — 1 से अधिक और 5 लिटर धारिता तक के — विशिष्टि

(First Reprint MAY 1994)

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 1989

Price Group 2

Plastics Containers Sectional Committee, MCPD 11

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on 3 January 1989, after the draft finalized by the Plastics Containers Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council

IS 8190 (Part 2) : 1980 lays down the packaging requirements for liquid pesticides Table 2 in IS 8190 (Part 2) : 1980 recommends the use of HDPE containers for water soluble concentrates and organo-phosphorus pesticides, like Dichlorvos, Monochrotophos and Phosphamidone HDPE bottles up to 1 litre capacity for liquid pesticides have been covered in IS 9754 : 1981 whereas containers of 2, 3 and 5 litre capacity are covered in this standard.

This standard is aimed solely at ensuring the mechanical and physical behaviour of HDPE containers intended for packaging of liquid pesticides when subjected to specified tests under conditions prescribed in this standard.

This standard cannot take account of the combined influence of time and temperature on the one hand and nature of contents on the other It is for the user of these containers to ascertain the long term storage conditions and compatibility of the contents and container under prescribed conditions and ensure their compliance to the statutory regulations in this respect.

AMENDMENT NO. 2 JULY 2003
TO
IS 12512 : 1989 HDPE CONTAINERS —FOR LIQUID PESTICIDES —CAPACITY OVER 1 AND UP TO 5 LITRES — SPECIFICATION

(*Foreword, para* 3) — Insert the following new paras after para 3

A scheme of labelling environment friendly products with the ECO logo has been introduced at the instance of the Ministry of Environment and Forests (MEF), Government of India The ECO-Mark is being administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolutions No 71 dated 21 February 1991 and No 425 dated 28 October 1992 published in the Gazette of the Government of India For a product to be eligible for marking with the ECO logo, it shall also carry the ISI Mark of the BIS besides meeting additional environment friendly requirements For this purpose the Standard Mark would be a single mark being a combination of the ISI Mark and the ECO logo

This amendment is based on the gazette Notification No 170 dated 18 May 1996 for plastic products as environment friendly products published in the Gazette of the Government of India This amendment is, therefore, being issued to this standard to include environment friendly requirements for HDPE containers For liquid pesticides — Capacity over 1 and up to 5 litres '

(*Page* 2, *clause* **5.6**) — Insert the following new clause after **5.6** and renumber the subsequent clauses

'6 ADDITIONAL REQUIREMENTS FOR ECO-MARK

6.1 General Requirements

6.1.1 The product shall conform to the requirements for quality, safety and performance prescribed

6.1.2 The manufacturer shall produce to BIS the consent as per the provisions of *Water (Prevention & Control of Pollution) Act*, 1974 and *Air (Prevention & Control of Pollution) Act*, 1981 along with the authorization, if required under *Environment (Protection) Act*, 1986 and the Rules made thereunder while applying for the ECO-Mark The manufacturers of plastic wares shall produce documentary evidence with respect to the compliance of regulation under *Drugs and Cosmetic Act*, 1940 and Rules made thereunder, wherever necessary

6.1.3 The product must display a list of critical ingredients in descending order of quantity present expressed as percent of the total The list of such ingredients shall be identified by Bureau of Indian Standards.

6.1.4 The product packaging shall display in brief the criteria based on which the product has been labelled as 'Environment Friendly'.

6.1.5 The material used for product packaging shall be recyclable or biodegradable.

6.1.6 It shall also suitably mention that ECO-Mark label is applicable only to the packaging material/package, if content is not separately covered under ECO-Mark It may be stated that ECO-Mark is applicable to the product or packaging material or both.

6.2 Product Specific Requirements

The plastic products shall apart from fillers and reinforcing agents, be made from the minimum of 90 percent, by weight of compatible plastic wastes.

NOTE — The manufacturer shall provide documentary evidence by way of certificate or declaration to this effect '

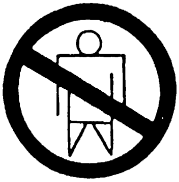
(PCD 21)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 1 MAY 1992
TO
IS 12512 : 1989 HDPE CONTAINERS — FOR LIQUID PESTICIDES — CAPACITY OVER 1 AND UP TO 5 LITRES — SPECIFICATION

(*Page* 2, *clause* 6.1) — Insert the following new clause after 6.1 and renumber the subsequent clause:

'**6.1.1** — The following sign shall be embossed on the side (not on the bottom) of the containers to safeguard the re-use of these empty HDPE containers for storing edible items.'



(PCD 21)

Reprography Unit, BIS, New Delhi, India

Indian Standard

HDPE CONTAINERS — FOR LIQUID PESTICIDES — CAPACITY OVER 1 AND UP TO 5 LITRES — SPECIFICATION

1 SCOPE

1.1 This standard prescribes the mechanical and physical properties and the corresponding tests for HDPE containers of nominal capacities 2, 3 and 5 litres intended to contain, and transport liquid pesticides.

2 REFERENCES

The following Indian Standards have been referred in this standard:

IS 7019 : 1982 Glossary of terms in plastics and flexible packaging excluding paper (*first revision*)

IS 7028 (Part 4) : 1987 Performance tests for complete, filled transport packages : Part 4 Vertical impact drop tests

IS 7028 (Part 6) : 1987 Performance tests for complete, filled transport packages : Part 6 Compression test

IS 7328 : 1974 High density polyethylene materials for moulding and extrusion

IS 7408 (Part 1) : 1984 Blow moulded polyolefin containers : Part 1 Up to 5 litres capacity (*first revision*)

IS 8190 (Part 2) : 1980 Requirements for packing of pesticides : Part 2 Liquid pesticides (*first revision*)

IS 9754 : 1981 High density polyethylene containers for packing of liquid pesticides (up to 1 litre capacity)

3 TERMINOLOGY

3.1 For the purpose of this standard, definitions given in IS 7019 : 1982 and IS 7408 (Part 1) : 1984 shall apply.

4 REQUIREMENTS

4.1 Material

4.1.1 The containers shall be made from blow moulding grade high density polyethylene (HDPE) conforming to Grades 43 BA or 53 BA of IS 7328 : 1974.

4.1.2 The plug and closure shall be made from HDPE of grade 43 MA or 45 MA. The plug may also be made from LDPE injection moulding grade with Melt Flow Index (i_5) of 2·0 *Max.*

4.2 Container Properties

4.2.1 *Style*

The container and the handle, if provided, shall be of one-piece construction. There shall be one closure of internal diameter not exceeding 25 mm. The closure shall be so designed that it seals efficiently and passes the closure leakage test as detailed in **5.1**.

4.2.2 *Rigidity and Stability*

The rigidity shall be sufficient to guarantee good stability to containers resting on their base. When inclined at 15° in relation to the vertical the container, filled to their nominal capacity, shall not topple over.

4.2.3 *Closure*

Closure system shall be efficient and not allow any leakage of liquid when tested in accordance with **5.1** and **5.2**.

4.2.4 *Marking Surface*

The containers shall include a clear surface on which details of marking are given and the special information as required under statutory regulations can be printed.

4.2.5 *Workmanship and Finish*

The container and closure shall be manufactured in accordance with good manufacturing practices and shall be free from any burnt, oxidized or unhomogenized particles which would affect the performance or appearance of the container.

4.3 Capacity

The brimful capacity of the containers shall provide for at least 5 percent ullage after filling to the nominal capacity.

4.4 Wall Thickness

The minimum thickness of the wall at any point when measured with a dial caliper gauge fitted with spherical anvils, vernier caliper or micrometer shall be not less than 1·75 mm.

5 TESTING

5.1 Closure Leakage Test

The container shall be filled with coloured water or the actual product if necessary leaving normal head space. After filling, the container shall be closed and sealed as in the final form. The closed container shall then be kept upside down over a white blotting paper for 30 minutes. After 30 minutes the container shall be examined for any leakage which would be evident from any visible stains on the blotting paper.

5.2 Vibration Test

Containers filled to their nominal capacity with water at ambient temperature and closed tightly when subjected to vibration test as given in Annex A shall not show any leakage through the closure after one hour of testing.

5.3 Resistance to Compression

When a container is subjected to compression loads as given below and tested in accordance with the method given in IS 7028 (Part 6) : 1987, shall not collapse or show deformation under the load likely to reduce its strength or to cause instability in stacking:

Nominal Capacity	*Compression Load*
Litres	kN
2	200
3	300
5	500

5.4 Vertical Drop Impact Test

Two containers filled with water at ambient conditions shall be subjected to drop impact test as detailed in IS 7028 (Part 4) : 1987 from a drop height of 1·2 m. Each container shall be subjected to three drops, one flat on bottom, one on the closure and one on the side. The container shall not show any sign of leakage at the closure, crack or permanent deformation which may impair its performance.

5.5 Ink Adhesion Test

The printed surface of the container when subjected to the test as per the details given in Annex B shall not show any significant sign of removal of the print.

5.6 Product Resistance of Printed Containers

The printed containers when tested as per the method given in Annex C shall not show complete removal of the ink from the surface of the container. Slight removal of the print from the surface shall not be taken as failure in this test.

6 MARKING

6.1 The containers shall be marked with the following information embossed or printed on them:

a) Manufacturer's name, initials or recognized trade-mark;

b) Nominal capacity;

c) Lot No. or year of manufacture; and

d) Any other informations required by the purchaser or statutory regulations.

6.1.1 The containers may also be marked with the Standard Mark.

ANNEX A

(*Clause* 5.2)

VIBRATION TEST

A-0 GENERAL

The method helps to determine the ability of a closure (on a container) to prevent leakage due to transportational vibration.

A-1 APPARATUS

A vibrating table with eccentricity in the vertical direction, amplitude of vibration 25 mm and frequency of vibration 8 Hz.

A-2 PROCEDURE

A-2.1 Fill the container to its nominal capacity with the product/water and close it with the usual closure in the manner in which it is intended to be used.

A-2.2 Mount the container upside down rigidly on the vibrating table for 1 hour.

A-2.3 At the end of the test period, the closure shall show no indication of leakage, loss of tightness, backing-off or popping.

A-3 PRECAUTIONS

Before the test is carried out it should be ensured that the inner plug, if provided, and cap are fully tightened.

ANNEX B

(*Clause* 5.5)

METHOD OF TEST FOR INK ADHESION

B-1 PROCEDURE

Apply two strips of 25 mm wide transparent cellulose tape to the print area of each container, one piece along the length of the container, and the other around the circumference The position should be varied from container to container, if possible covering the whole print area in stages. Press the tape firmly into the container with a thumb and leave for 15 seconds. Pull off the tape slowly and then rapidly with a jerk.

B-2 OBSERVATION

Record whether the print is removed or not.

ANNEX C

(*Clause* 5.6)

TEST FOR PRODUCT RESISTANCE OF PRINTED CONTAINERS

C-1 PROCEDURE

C-1.1 Leave the container to stand for at least 24 hours after printed.

C-1.2 Partially immerse the containers, or representative sections cut out for printed area, in the product to be packed, or smear the product on the printed area of the containers, and leave for 1 hour at a temperature of 27 ± 5°C.

C-1.3 Rinse each container or representative section in cold water and leave to stand until dry.

C-1.4 Rub each container or representative section firmly with dry paper tissue ten times.

C-2 OBSERVATION

Record the degree of print removal as nil, slight and severe. The grading shall be agreed between the purchaser and the supplier.

Bureau of Indian Standards

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